

**COMBINED WAVEFRONT SENSOR AND DATA DETECTOR FOR A FREE SPACE**

**OPTICAL COMMUNICATIONS SYSTEM WITH ADAPTIVE OPTICS**

**ABSTRACT OF THE DISCLOSURE**

In an adaptive optics module, wavefront sensing and data detection are implemented in a single device. For example, an optical-to-electrical converter converts a data-encoded optical beam to an intermediate electrical signal, which contains both the data encoded in the beam and also wavefront information about the beam. The data and wavefront information are later separated, for example by frequency filtering.